

Pediatric Stroke

Condition: When blood flow to part of the brain is changed (too much or too little) and the brain tissue and cells are injured and begin to die is known as a stroke. When an infant or child under the age of 18 has a stroke, it is a pediatric stroke.

Background: Strokes can happen anytime throughout childhood and before birth. A perinatal stroke is when there is a disruption of blood flow to the brain prior to birth to 1 month after birth. This occurs in 37 to 67 out of 100,000 children. Some children can also have a stroke prior to the age of 18 and this happens in 1 to 8 children out of 100,000. Perinatal strokes commonly present in babies with seizures instead of the typical weakness or slurred speech seen in older children. More than half of pediatric strokes are ischemic, which means they are due to a blockage in a blood vessel that carries blood to the brain, such as a blood clot. The other most common cause of stroke is hemorrhagic, which means a blood vessel in the brain breaks and there is bleeding.

Risk Factors: Boys and African American children are at higher risk for stroke. Certain disorders that lead to increased blood clotting, such as congenital heart defects, sickle cell disorder, trauma, blood vessel abnormalities (AVM-arteriovenous malformations), or cancer also put children at a higher risk.

History and Symptoms: With infants, it can be challenging but a caregiver should be concerned if they notice a seizure or altered mental state. In older children, they may notice nausea, vomiting, weakness, numbness, slurred speech, dizziness, and headaches. Make sure to remember when the last time the child had no symptoms and tell the doctors this.

Physical Exam: All adults should know about FAST. If an adult believes a child is having a stroke, he/she should do the following:

1. **Face:** Ask the child to smile. If one side of the face droops, it could indicate stroke.
2. **Arms:** Ask the child to lift both arms. Does one go downward?
3. **Speech:** Ask the child to repeat a simple phrase. Is it slurred or strange?
4. **Time:** If any of these symptoms are present, call 911 immediately.

Diagnostic Process: To better understand the type of stroke and areas of the brain affected, the team may get multiple imaging tests like a CT Scan or MRI of the brain. The doctors may also order other tests including blood work and an ultrasound of the heart to look for different causes of the stroke. While in the hospital, the physical medicine and rehabilitation (PM&R) physician will work with all other specialists (ex. Neurology, Hematology, Neurosurgery, Gastrointestinal) to provide the best care for the child.

Rehab Management: The recovery of each child is unique and requires a PM&R physician, occupational therapist, physical therapist, speech therapist, neuropsychologist, social worker, school service officials, and nutritionist to develop an individual plan. After a stroke, a child can have trouble with muscle weakness, muscle tightness (spasticity), trouble swallowing (dysphagia), trouble with thinking, or trouble talking. A PM&R physician can help manage and coordinate treatment for many of the conditions that can occur after a stroke. A PM&R physician works closely with the physical, occupational, and speech therapy teams to maximize recovery following the stroke. The physical therapy team will work on gross motor skills (walking), strength and balance. The occupational therapy team works on fine motor skills (writing) and activities of

daily living (bathing, going to bathroom, brushing hair, etc.). The speech therapy team will work on talking, swallowing, and thinking. The PM&R physician may also recommend a brace or splint based on the child's progress in therapy to provide joint stability or to help stretch a joint. If the child has muscle tightness, the PM&R physician can prescribe some medications or do an injection to help decrease the tightness. The entire rehabilitation team should work together with the child's school to develop a plan so the child can receive the appropriate services for their particular condition. Long-term follow up is best accomplished with a multidisciplinary team approach to optimize each child's recovery.

Other Resources for Patients and Families: The [Children's Hemiplegia and Stroke Association](#) helps families with children who have had strokes.

Frequently Asked Questions

What is PM&R?

Physical medicine and rehabilitation (PM&R), also known as physiatry, is a primary medical specialty that aims to enhance and restore functional ability and improve quality of life to those with injuries, physical impairments or disabilities affecting the brain, spinal cord, nerves, bones, joints, ligaments, muscles and tendons. PM&R physicians, known as physiatrists, evaluate and treat the whole body, maximize patients' independence in their daily life and are experts in designing comprehensive, patient-centered treatment plans to empower patients to achieve their goals. By taking the whole body into account, they can accurately pin-point problems, decrease pain, assist in recovery from devastating injuries and maximize overall outcomes and performance with non-surgical and peri-surgical options. To learn more, visit www.aapmr.org/aboutpmr.

What makes PM&R physicians unique?

PM&R physicians' training focuses not just on treating medical conditions, but on enhancing the patient's performance and quality of life in the context of those medical conditions. They focus not only on one part of the body, but instead on the development of a comprehensive program for putting the pieces of a person's life back together – medically, socially, emotionally and vocationally – after injury or disease. PM&R physicians make and manage medical diagnoses, design a treatment plan and prescribe the therapies that physical therapists or other allied therapists perform or that are carried out by the patients themselves. By providing an appropriate treatment plan, PM&R physicians help patients stay as active as possible at any age. Their broad medical expertise allows them to treat disabling conditions throughout a person's lifetime.

Why see a PM&R physician?

A PM&R physician will thoroughly assess your condition, needs, and expectations and rule out any serious medical illnesses to develop a treatment plan. By understanding your condition and goals, you and your PM&R physician can develop a treatment plan suited to your unique needs.

How do I find a PM&R physician near me?

Visit www.aapmr.org/findapmphysician or contact your primary care physician for a referral.